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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/651,054	08/28/2003	John M. Thompson	1068-001	8993
27820	7590	07/22/2005	EXAMINER	
WITHROW & TERRANOVA, P.L.L.C.			HOANG, JOHNNY H	
P.O. BOX 1287			ART UNIT	
CARY, NC 27512			PAPER NUMBER	
			3747	

DATE MAILED: 07/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/651,054

Applicant(s)

THOMPSON ET AL.

Examiner

Johnny H. Hoang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 May 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Response to amendment

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wachi et al (US 6,499,474 B2) in view of Higgs et al (US 4,417,467).

Regarding claim 1, the reference of Wachi et al discloses an air/fuel ratio control apparatus for internal combustion engine which including the following subject matter:

detecting a peak in an oxygen level in an exhaust stream (col. 6, lines 51-60); and

linking the peak in the oxygen level to a particular cylinder in the engine (abstract); the reference of Wachi et al does not teach reporting the peak in the oxygen level to an operator in a human readable format.

However, the reference of Higgs et al discloses a graphical display of engine cylinder parameters which including the DAU includes a CRT video display 42 that is driven by a video map RAM 44 through I/O lines 46 from the processor bus 32 (col. 3, line 29-37).

It would have been an obvious to one of ordinary skill in the art at the time the invention was made to modify and/or provide the apparatus of Wachi et al with a display of peaks, as that of Higgs et al.

Regarding claim 2, the reference of Wachi et al discloses the air/fuel ratio lambda is detected by sensor 8 which including the oxygen sensor is a lambda sensor.

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Regarding claims 3-4, 7-9, and 21-24, as discussed above.

Regarding claims 10-12, the reference of Higgs et al further teaches linking the peak in the oxygen level to a particular cylinder in the engine comprises comparing the linked timing reference and peak to a fingerprint (VRT video display 42) for the engine (above discussions and see abstract for further information).

Regarding claims 13-17, and 25-26 as above discussions, Wachi et al further teach DAU includes a microprocessor CPU 34 and RAM 38 with memory storage capacity based on total data storage requirements (col. 3, lines 11-51), which is a computer readable medium.

Regarding claims 5, 6, and 18-20, the reference of Wachi et al discloses the system with respective cylinders (#1 through #4) of the engine.

Response to Arguments

3. Applicant's arguments filed May 12, 2005 have been fully considered but are moot in view of the new group(s) of rejection. **Claims 1-26 are pending.**

Conclusion

74. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Johnny H. Hoang whose telephone number is (571) 272-4843. The examiner can normally be reached on 8:00Am-6:30Pm.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Henry Yuen can be reached on (571) 272-4856. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JHH
July 18, 2005

Johnny H. Hoang
Examiner
Art Unit 3747


Tony M. Argenbright
Primary Examiner
Art Unit 3747